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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,596	04/05/2006	Motohiko Sako	MAT-8837US	4300
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EXAMINER				
KARACSONY, ROBERT				
ART UNIT		PAPER NUMBER		
2821				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/574,596

Applicant(s)

SAKO, MOTOHIKO

Examiner

ROBERT KARACSONY

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(c), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(c) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 17, 2008 has been entered.

Claim Objections

2. Claims 9 and 10 are objected to because of the following informalities: In line 2, claims 9 and 10, please replace "ground plane" with --ground board--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 and 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by *Ha et al.* (US 2002/0033774, hereinafter *Ha*).

Claim 1: *Ha* (fig. 4A) teaches a composite antenna device comprising:

a ground board (GND);

an unbalanced antenna (ANT1) including,

a first feeding point (B) coupled with the ground board,

a first radiator (vertical portion of ANT1) having a first end and a second end, the first end of the first radiator being connected with the first feeding point, a load conductor (horizontal portion of ANT1) connected with the second end of the first radiator, the load conductor intersects a straight line which also passes through the first feeding point and which is perpendicular to the ground board, the load conductor has a shape symmetrical about the straight line (fig. 4A); and a balanced antenna (ANT2) including a second feeding point (A), a second radiator (309, fig. 4C) connected with the second feeding point, and a third radiator (308, fig. 4C) connected with the second feeding point, wherein the second radiator and the third radiator are placed at positions symmetrical to each other about the straight line, respectively, and have shapes symmetrical to each other about the straight line (fig. 4A).

Claim 2: *Ha* teaches the shape of the load conductor is electrically symmetrical about the straight line passing through the first feeding point, and wherein the second radiator and the third radiator are placed at positions electrically symmetrical to each other about the straight line, respectively, and have shapes electrically symmetrical to each other about the straight line (since the dimensions of the structure are symmetrical, it is inherently electrically symmetrical).

Claim 3: *Ha* teaches wherein the shape of each of the load conductor and the first radiator is symmetrical about a plane intersecting the straight line, the plane extending perpendicular to the ground board and passing through the first feeding point, and wherein the

second radiator and the third radiator are placed at positions symmetrical to each other about the plane, respectively, and have shapes symmetrical to each other about the plane (fig. 4A).

Claim 4: *Ha* teaches the shape of each of the load conductor and the first radiator is electrically symmetrical about the plane, and wherein the second radiator and the third radiator are placed at positions electrically symmetrical to each other about the plane, respectively, and have shapes electrically symmetrical to each other about the plane (since the dimensions of the structure are symmetrical, it is inherently electrically symmetrical).

Claims 7 and 8: *Ha* teaches the plane extends along the first radiator (fig. 4A).

Claim 9: *Ha* teaches the unbalanced antenna is between the balanced antenna and the ground board (fig. 4A).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Ha*.

Claim 5: *Ha* (fig. 4A) teaches a composite antenna device comprising:

a ground board (GND);

an unbalanced antenna (ANT1) including

a first feeding point (B) coupled with the ground board,

a first radiator (vertical portion of ANT1) having a first end and a second end, the first end of the first radiator being connected with the first feeding point, and

a load conductor (horizontal portion of ANT1) having a first end, a second end, and a connection point where the load conductor is connected with the second end of the first radiator, the load conductor intersects a straight line which also passes through the first feeding point and which is perpendicular to the ground board (fig. 4A);

a balanced antenna (ANT2) including

a second feeding point (A),

a second radiator (309, fig. 4C) connected with the second feeding point, and

a third radiator (308, fig. 4C) connected with the second feeding point,

wherein the load conductor of the unbalanced antenna includes a first portion (portion of load conductor adjacent 308) and a second portion (portion of load conductor adjacent 309), the first portion of the load conductor being provided between the first end of the load conductor and the connection point, the second portion being provided between the second end of the load conductor and the connection point (fig. 4A).

H_a fails to teach an impedance Z_{11} of the first portion of the load conductor, a mutual impedance Z_{12} of the second radiator to the first portion of the load conductor, a mutual impedance Z_{21} of the first portion of the load conductor to the second radiator, an impedance Z_{22} of the second radiator, an impedance Z_{33} of the second portion of the load conductor, a mutual impedance Z_{34} of the third radiator to the second portion of the load conductor, a mutual impedance Z_{43} of the second portion of the load conductor to the third radiator, and an impedance Z_{44} of the third radiator satisfy the relation of

$$\begin{pmatrix} Z_{11} & Z_{12} \\ Z_{21} & Z_{22} \end{pmatrix} = \begin{pmatrix} Z_{33} & Z_{34} \\ Z_{43} & Z_{44} \end{pmatrix}$$

However, *Ha* teaches “as the distance is increased, the resonance points of the two bands are further apart from each other and a transmission rate in the DCS band is twice as high than that in the GSM band. As the distance is decreased, the result is opposite to the foregoing. It is to change a resonant frequency by controlling the length of the GSM antenna ANT2 or the length of the horizontal portion 300 of the DCS antenna ANT1.” (paragraph [0038]) A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have adjusted the distance between ANT1 and ANT2, as well as, the length of ANT1 and ANT2, such that, the coupling between ANT1 and ANT2 is eliminated.

Claim 6 is similar in scope as claim 5 and is therefore rejected for substantially the same reasons.

Claim 10 is similar in scope as claim 9 and is therefore rejected for substantially the same reasons.

7. Claims 1-4 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Izadian* (US 5,300,936, hereinafter *Izadian*) in view of *Kuramoto* (US 6,788,265, hereinafter *Kuramoto*).

Claim 1: *Izadian* (fig. 8) teaches a composite antenna device comprising:
a ground board (28);

an unbalanced antenna (22) including,

a first feeding point (feed of antenna 22) coupled with the ground board,
a first radiator (22) having a first end and a second end, the first end of the first radiator being connected with the first feeding point; and

a balanced antenna (112) including

a second feeding point (feed of 112),
a second radiator (one of 112) connected with the second feeding point, and
a third radiator (other one of 112 opposite of second radiator) connected with the second feeding point,

wherein the second radiator and the third radiator are placed at positions symmetrical to each other about the straight line, respectively, and have shapes symmetrical to each other about the straight line (fig. 8).

Izadian fails to teach a load conductor connected with the second end of the first radiator, the load conductor intersects a straight line which also passes through the first feeding point and which is perpendicular to the ground board, the load conductor has a shape symmetrical about the straight line. However, *Kuramoto* teaches loading monopole antennas to reduce/shorten the length of the antenna (col. 1/lines 50-54). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have loaded antenna 22 of *Izadian*, as taught by *Kuramoto*, in order to have reduced the length of the antenna.

Claim 2: The modified invention of *Izadian* teaches the shape of the load conductor is electrically symmetrical about the straight line passing through the first feeding point, and wherein the second radiator and the third radiator are placed at positions electrically symmetrical

to each other about the straight line, respectively, and have shapes electrically symmetrical to each other about the straight line (since the dimensions of the structure are symmetrical, it is inherently electrically symmetrical).

Claim 3: The modified invention of *Izadian* teaches wherein the shape of each of the load conductor and the first radiator is symmetrical about a plane intersecting the straight line, the plane extending perpendicular to the ground board and passing through the first feeding point, and wherein the second radiator and the third radiator are placed at positions symmetrical to each other about the plane, respectively, and have shapes symmetrical to each other about the plane (fig. 8).

Claim 4: The modified invention of *Izadian* teaches the shape of each of the load conductor and the first radiator is electrically symmetrical about the plane, and wherein the second radiator and the third radiator are placed at positions electrically symmetrical to each other about the plane, respectively, and have shapes electrically symmetrical to each other about the plane (since the dimensions of the structure are symmetrical, it is inherently electrically symmetrical).

Claims 7 and 8: The modified invention of *Izadian* teaches the plane extends along the first radiator (fig. 8).

Claim 9: The modified invention of *Izadian* teaches the unbalanced antenna is between the balanced antenna and the ground board (fig. 8).

Response to Arguments

8. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT KARACSONY whose telephone number is (571)270-1268. The examiner can normally be reached on M-F 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas W. Owens can be reached on 571-272-1662. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. K./
Examiner, Art Unit 2821

/Hoang V Nguyen/
Primary Examiner, Art Unit 2821

